REMARKS

This paper is in response to the Office Action mailed on September 23, 2004.

Claims 29, 38, and 43 are amended. Claims 52-58 are added. As a result, claims 1-58 are now pending in this application.

§103 Rejection of the Claims

Claims 1-23, 25-29, 31-34, 37, 38, 40-43, and 45-51 were rejected under 35 USC § 103(a) as being unpatentable over John et al. (Journal of Lightwave Tech), hereafter John.

Applicant respectfully traverses because a *prima facie* of obviousness has not been made.

Independent claim 1 recites:

> a first periodic array of unit cells formed in a substrate from first voids connected by imaginary bonds, wherein the first voids are distinct from each other, and wherein the first periodic array alone forms an incomplete bandgap; and
>
> a second periodic array of second voids, wherein the second voids are distinct from each other and from the first voids, wherein each second void is arranged along one of the imaginary bonds so as to modify each unit cell to form a complete photonic bandgap.

John appears to teach a method of forming a phonic bandgap (PBG) material. Fig. 1 on page 1933 of John shows the structure of the PBG material of John having a number of air spheres (voids). On page 1934, last paragraph and continuing on page 1935, John teaches that the air spheres are formed by infiltrating high dielectric material onto a template of "close-packed" low dielectric spheres. After the infiltration of the high dielectric material, the low dielectric spheres are removed by etching, leaving behind a connected network ("Swiss cheese structures") of high dielectric material with air spheres (the air spheres occupy the spaces vacated by the removed low dielectric spheres).

Since the low dielectric spheres are "close-packed", after the low dielectric spheres are removed, the resulting air spheres are "overlapping". This "overlapping" feature is stated by John in the description below Fig. 1 on page 1933. In contrast, none of the first and second voids (air spheres) recited in claim are "overlapping". As recited in claim 1, the first voids are

"distinct" from each other and the second voids are "distinct" from each other and from the first voids.

Based on the discussion presented above, Applicant is unable to find in John a showing or a fair suggestion that the air voids of John et al. are "distinct" from each other. In contrast, claim 1 recites, among other things, "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claim 1 and its dependent claims be allowed.

Independent claim 9 recites, among other things, "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". As explained in details in the discussion of claim 1, Applicant is unable to find in John a showing or a fair suggestion that "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claim 9 and its dependent claims be allowed.

Independent claim 16 recites, among other things, "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". As explained in details in the discussion of claim 1, Applicant is unable to find in John a showing or a fair suggestion that "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claim 16 and its dependent claims be allowed.

Independent claim 23 recites, among other things, "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". As explained in details in the discussion of claim 1, Applicant is unable to find in John a showing or a fair suggestion that "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claim 23 and its dependent claims be allowed.

Independent claim 29 recites, among other things, "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". As explained in details in the discussion of claim 1, Applicant is unable to find in John a showing or a fair suggestion that "the first voids are distinct from each other" and "the second voids are distinct

from each other and from the first voids". Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claim 29 and its dependent claims be allowed.

Independent claim 38 recites, among other things, "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". As explained in details in the discussion of claim 1, Applicant is unable to find in John a showing or a fair suggestion that "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claim 38 and its dependent claims be allowed.

Independent claim 43 recites, among other things, "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". As explained in details in the discussion of claim 1, Applicant is unable to find in John a showing or a fair suggestion that "the first voids are distinct from each other" and "the second voids are distinct from each other and from the first voids". Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claim 43 and its dependent claims be allowed.

Claims 24, 30, 35, 36, 39, and 44 were rejected under 35 USC § 103(a) as being unpatentable over John et al. (Journal of Lightwave Tech).

Applicant respectfully traverses because a *prima facie* case of obviousness has not been made.

Claims 24, 30, 35, 36, 39, and 44 depend on their respective independent claims 23, 29, 38, and 43. As explained in detail above, independent claims 23, 29, 38, and 43 are patentable over John. Thus, dependent claims 24, 30, 35, 36, 39, and 44 are also patentable over John for reasons at least similar to the reasons presented above regarding the independent claims plus the additional things recited in the dependent claims. Accordingly, Applicant requests that the rejection be reconsidered and withdrawn and that claims 24, 30, 35, 36, 39, and 44 be allowed.

New Claims

Applicant believes that new claims 52-58 are patentable over John for reasons at least similar to the reasons presented in the discussion of claim 1. Accordingly, Applicant requests that claims 52-58 be considered and allowed.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative at (612) 373-6969 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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